REMARKS

Applicant thanks Examiner for acknowledging receipt of foreign priority document, Japanese Application No. JP2000-246872, that has been submitted pursuant to 35 U.S.C. § 119.

Applicant respectfully requests reconsideration of Examiner's rejection of claims 2, 3, 11, and 12 under 35 U.S.C. §112. Applicant has amended these claims in order to comport with the requirements of Section 112. Applicant submits that the basis for the Examiners § 112 rejections have herein been eliminated, and therefore request that the Examiner now withdraw these rejections.

Applicant respectfully requests reconsideration of the Examiner's prior art rejections set forth under Sections 102 and 103. Applicant respectfully submits that the prior art references of record, whether considered alone or in combination, fail to either teach or suggest the presently claimed subject matter.

Applicant specifically respectfully requests reconsideration of Examiner's rejection of claims 1, 2, and 5 - 9 under 35 U.S.C. §102(e). In rejecting claim 1, Examiner states that *Yotsuya* (U.S. Patent No. 6,469,832) teaches Applicant's invention in Figures 1 and 5 – 8. Examiner provides no support for this assertion from the text of the patent. The *Yotsuya* patent is directed to an improved method of manufacturing a microlens substrate in which the thickness of a resin layer can be regulated with high accuracy. (Col. 1, lines 48-50 and lines 53-54). *Yotsuya* accomplishes this by utilizing spacers 5 placed in the "non effective lens-

region" 100 such that the thickness of the layer in which the spacer is placed can be controlled with "high accuracy." As shown in Figure 7, *Yotsuya* places these spacers in the micro-lens resin layer 9 and in the liquid crystal layer 18. *Yotsuya* asserts that "by providing the spacers 5 outside the effective lens region 99, a risk of deteriorating optical characteristics of the microlenses 4 can be avoided. Therefore, the optical characteristics of the microlenses 4 can be fully exhibited." (Col. 3 lines 34 – 38). Despite these advantages, *Yotsuya* provides no teaching or suggestion whatsoever in relation to Applicant's currently claimed invention.

Applicant's invention is directed to an improved method of manufacturing a liquid crystal display device utilizing microlenses capable of focusing light with a high efficiency. In prior art devices, a counter substrate including pre-cured microlens arrays and a TFT substrate including the liquid crystal region are manufactured separately and then joined together using an adhesive type material. Applicant discloses such a method in Figures 1 – 3 and pages 1 - 5. *Yotsuya* discloses such a method in Column 9 lines 16 – 23 and Figures 6 and 7. However, by using such a method, there is the problem that the two substrates are not aligned properly, and optical quality suffers.

Applicant's invention is directed to solving this problem by eliminating the need to align the two substrates. Applicant achieves this goal by not forming the microlens in the UV reactive resin until *after* the two substrates have been formed and attached. In Applicant's current invention, a TFT substrate is formed including an electro-optic layer which in one embodiment is filled with a liquid crystal composition. A second counter substrate is formed including an uncured resin layer. Whereas in the prior art, the microlens array is formed via a

master substrate applied to the uncured resin before joining the two substrates, Applicant advantageously joins the two substrates *prior* to forming the microlens array. In the preferred embodiment, after the two devices are joined and the joining adhesive is heat treated, UV light is irradiated through the openings in the light-blocking layer to form a microlens array that is consistently and accurately aligned with the light-blocking layer pattern. As a result, transmission rate is improved and resulting image quality is correspondingly improved. Further, because the microlens array is not formed until after the two substrates are joined, a more effective adhesive and heat treatment can be applied to join the two substrates. In contrast, previously one had to balance the effectiveness of the adhesive and any potential damage to the previously formed microlens array. Finally, since the microlens array is formed using the light-blocking layer as a pattern, there is no need to continuously maintain a microlens master. At no point does the *Yotsuya* teach or suggest such a method.

Applicant respectfully requests reconsideration of Examiner's rejection of claims 1, 3, and 5 - 9 under 35 U.S.C §103(a). In rejecting claim 1, Examiner claims that *Hamanaka* (U.S. Patent No. 6,031,591) teaches Applicant's invention in Figures 2 - 6. The *Hamanaka* patent is directed to hermetically sealing the space between the microlens and the cover glass, said space filled with an inactive gas such as nitrogen or argon. At no point does *Hamanaka* teach or suggest the presently disclosed invention of forming the microlens *after* the TFT and counter substrates are joined by irradiating light from the opposite end of the device to cure the resin and form the microlens. As disclosed in Figures 5 and 6 of the *Hamanaka* reference, the microlens array is already formed when the two substrates are joined together.

Examiner's remaining references cited but not relied upon, considered either alone or in combination, also fail to teach applicant's currently claimed invention. In light of the foregoing, Applicant respectfully submits that all claims now stand in condition for allowance.

Respectfully submitted,

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